Supplemental Information

Integrative Genomic and Transcriptomic Characterization of Matched Primary and Metastatic Liver and Colorectal Carcinoma

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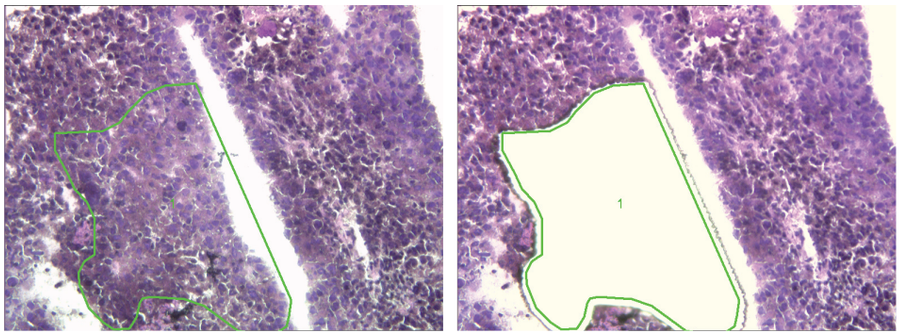
Supplemental Figure legends

Supplemental Figure S1: Representative images of primary tumors and metastatic tissues before and after LCM. In green two areas selected for LCM are shown.

Supplemental Figure 1

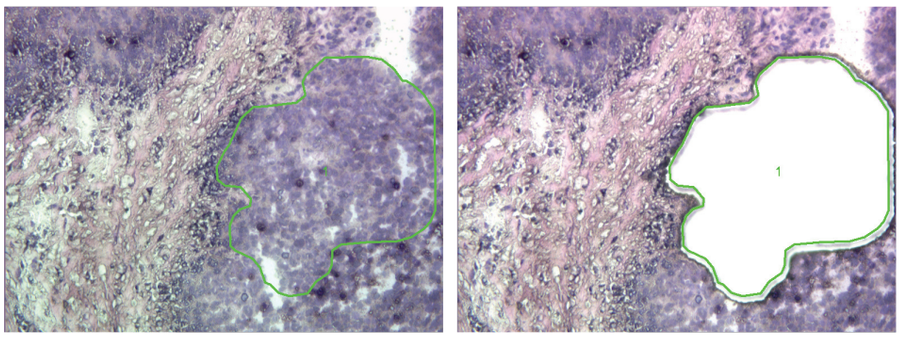
A

PEM-08P
HCC with adrenal gland metastasis



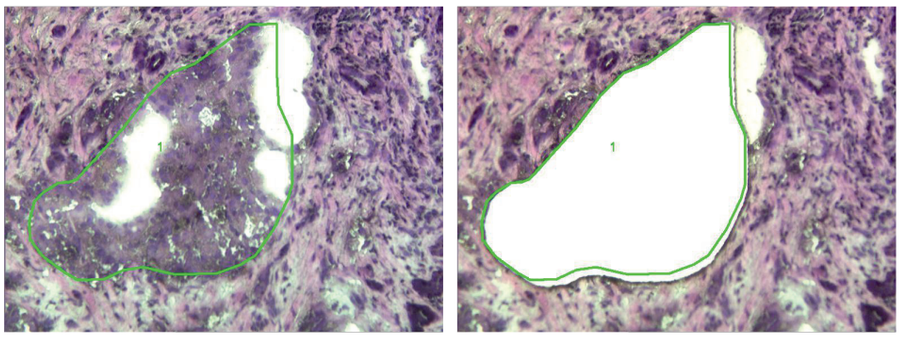
B

PEM-08M
HCC with adrenal gland metastasis



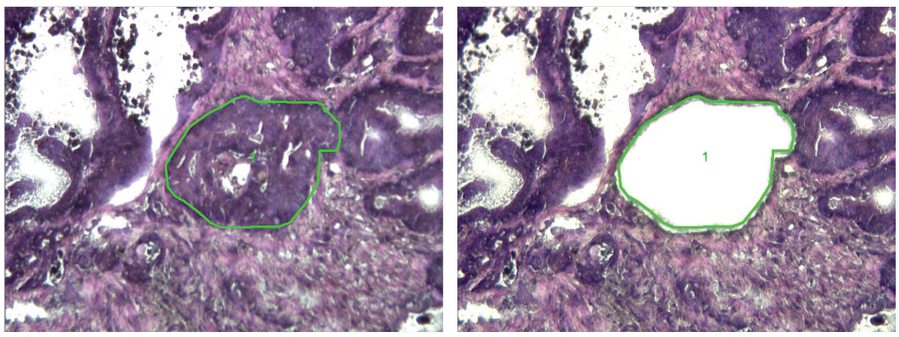
C

PEM-13P
HCC with lung metastasis



D

GIM-04P
Colon carcinoma with liver metastasis



E

GIM-04M
Coloncarcinoma with liver metastasis

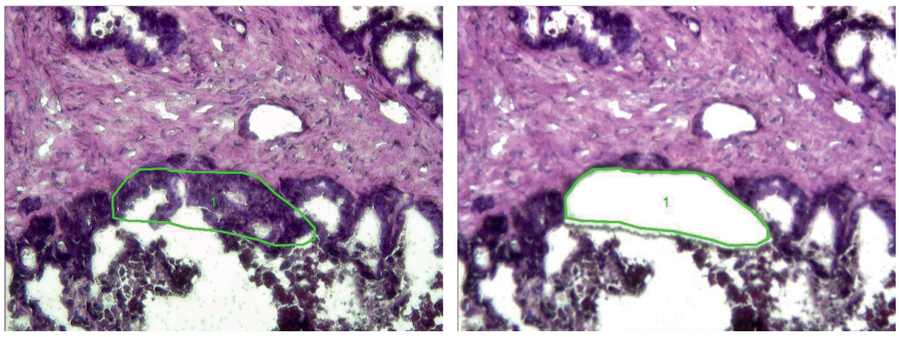


Table S1: Patient characteristics

Patient ID	Pathology	Tissue collected	Surgery
GIM-01	Colon adenocarcinoma with liver metastasis	primary and metastasis	resection
GIM-02	Colon adenocarcinoma with liver metastasis	primary and metastasis	resection
GIM-04	Colon adenocarcinoma with liver metastasis	primary and metastasis	resection
GIM-09	Colon adenocarcinoma with liver metastasis	primary and metastasis	resection
GIM-11	Gastric adenocarcinoma with liver metastasis	primary	resection
GIM-12	Colon adenocarcinoma with liver metastasis	primary and metastasis	resection
GIM-13	Colon adenocarcinoma with liver metastasis	primary and metastasis	resection
GIM-14	Colon adenocarcinoma with liver metastasis	primary and metastasis	resection
NL-01	Hemangioma of liver	normal liver	
NL-05	Hemangioma of liver	normal liver	
NL-06	Hemangioma of liver	normal liver	
NL-07	Hemangioma of liver	normal liver	
NL-09	Hemangioma of liver	normal liver	
NM-01	HCC [a] without metastasis	HCC	resection
NM-02	HCC without metastasis	HCC	resection
NM-03	HCC without metastasis	HCC	resection
NM-04	HCC without metastasis	HCC	resection
NM-05	HCC without metastasis	HCC	resection
NM-06	HCC without metastasis	HCC	resection
NM-07	HCC without metastasis	HCC	resection
NM-09	HCC without metastasis	HCC	resection
NM-10	HCC without metastasis	HCC	resection
NM-11	HCC without metastasis	HCC	resection
PEM-01	CC [b] with lymph node metastasis	primary and metastasis	resection
PEM-02	CC with lymph node metastasis	primary and metastasis	resection
PEM-03	Angiosarcoma with lymph node metastasis	primary and metastasis	resection
PEM-04	HCC/CC with lymph node metastasis	primary and metastasis	resection
PEM-06	CC with lymph node metastasis	primary and metastasis	resection
PEM-07	HCC with adrenal gland metastasis	primary and metastasis	resection
PEM-08	HCC with adrenal gland metastasis	primary and metastasis	resection
PEM-09	HCC with adrenal gland metastasis	primary and metastasis	resection
PEM-11	CC with lung metastasis	metastasis	resection
PEM-12	HCC with lung metastasis	primary and metastasis	resection
PEM-13	HCC with lung metastasis	primary and metastasis	resection
PEM-14	HCC with lung metastasis	metastasis	resection
PEM-15	HCC with lung metastasis	metastasis	liver transplantation
PEM-16	HCC with lung metastasis	metastasis	resection
PEM-17	HCC with lung metastasis	metastasis	liver transplantation
PEM-18	HCC with lung metastasis	metastasis	liver transplantation
PEM-19	HCC with lung metastasis	metastasis	liver transplantation
PEM-20	HCC with lung metastasis	metastasis	liver transplantation
PEM-21	HCC with lung metastasis	metastasis	resection
PEM-22	HCC with lung metastasis	metastasis	resection
PEM-23	HCC with lung metastasis	metastasis	liver transplantation

[a] HCC: Hepatocellular carcinoma. [b] CC: Cholangiocarcinoma

Table S2: Overlapping metastasis genes. Comparison of colorectal carcinoma metastasis to the liver (Liver Metastasis), liver cancer metastasis to the lung (Lung Metastasis) and liver cancer metastasis to the lymph node (Lymph Node Metastasis) to non-metastatic liver carcinoma (NM).

		Colon		Lung		Lymph Node	
Symbol	**Function**	**FDR**	**Fold change**	**FDR**	**Fold change**	**FDR**	**Fold change**
ACOT12	metabolism	<0.001	0.03	0.050	0.18	<0.001	0.03
ADAM9	cell-cell, cellular matrix interaction	<0.001	8.88	0.060	3.20	0.014	4.76
ALDOA	metabolism	0.001	7.93	0.016	5.31	0.001	7.52
APOC2	metabolism	<0.001	0.01	0.058	0.46	<0.001	0.05
APOH	metabolism	<0.001	0.01	0.054	0.50	0.001	0.03
AREG	proliferation	<0.001	44.94	0.063	2.99	0.015	4.68
CYP4F3	metabolism, inflammation	<0.001	0.12	0.058	0.34	<0.001	0.02
IGFBP1	proliferation, migration	<0.001	0.07	0.042	3.85	0.017	0.10
ITGA2	extracellular matrix	<0.001	20.74	0.050	4.02	0.017	4.40
KARS	protein synthesis, autoimmunity	0.010	2.93	0.060	2.02	0.014	3.05
PRSS23	metastasis, fibrosis	0.003	6.96	0.058	2.85	0.019	5.28
RORA	hormone signaling	<0.001	0.10	0.059	0.45	<0.001	0.10
SALL1	histone modification	<0.001	0.10	0.063	2.03	<0.001	0.14
TF	proliferation, iron transport	<0.001	0.00	0.058	0.51	<0.001	0.03

Table S3: Minimal aberrant gain and loss regions significantly different between colon cancer (GIM) and HCC (PEM)

Cytoband	Size [Mb]	GIM [%]	PEM [%]	SCNA	p-value [a]	Number of Genes	Correlating Genes
1q12-q44	103.55	7-14	45-65	Gain	0.001-0.03	909	235
1q44	0.29	14-21	55-60	Gain	0.013-0.038	6	1
5p15.33	0.07	0	30	Gain	0.031	1	0
5p15.33	0.44	0	30	Gain	0.031	7	3
5p14.3	4.37	0	30	Gain	0.031	2	0
6p22.1	0.05	0	30	Gain	0.031	1	0
8q11.1-q22.3	58.4	0-7	40-50	Gain	0.004-0.05	212	63
8q23.1-q24.3	38.84	7	45	Gain	0.024	174	77
13q11-q14.2	28.62	36	0	Gain	0.007	139	56
16q22.2	0.34	0	30-35	Gain	0.026-0.031	1	0
17q11.1-q12	9.13	0	30	Gain	0.031	121	30
17q12-q21.31	9.63	0	30	Gain	0.031	231	73
17q21.31-q25.3	35.29	0	30-35	Gain	0.026-0.031	376	115
17q25.3	1.07	0	30	Gain	0.031	28	12
2q11.2	0.33	29	0	Loss	0.022	2	0
3p24.3	2.12	7	45	Loss	0.024	5	2
3p24.3-p24.1	6.85	7	45	Loss	0.024	18	6
3p24.1-p22.3	4.11	7	45	Loss	0.024	18	8
3q12.1	0.01	7	50	Loss	0.011	0	0
3q26.1	0.1	29-43	85	Loss	0.001-0.023	0	0
4q12-q13.2	11.59	7	40	Loss	0.05	18	4
4q22.3	0.14	7	40	Loss	0.05	1	0
5q13.2	0.08	0	30	Loss	0.031	2	0
6p21.32	0	57	10	Loss	0.006	0	0
9p24.3-p21.2	26.49	0	35-40	Loss	0.011-0.026	88	16
9p21.2-p21.1	0.79	0	35	Loss	0.026	2	0
11p15.4	0.02	0	30	Loss	0.031	1	0
13q12.11	0.06	0	30	Loss	0.031	1	0
13q13.1-q21.1	26.62	0	30	Loss	0.031	113	48
14q11.2	0	0	35	Loss	0.026	0	0
15q14	0.2	50	10	Loss	0.017	2	0
16q22.2-q24.3	18.22	0	35	Loss	0.026	137	35
17q21.31	0.04	50-86	5-30	Loss	0.002-0.004	1	0
18p11.32-q23	75.23	29-50	0-10	Loss	0.001-0.042	244	65
21q21.1	1	0	30	Loss	0.031	1	0
21q21.2	0.32	0	30	Loss	0.031	0	0
21q22.11	0.61	0	30	Loss	0.031	4	1
21q22.13	0.81	0	30	Loss	0.031	5	1
21q22.2-q22.3	0.69	0	30	Loss	0.031	1	0
21q22.3	0.87	0	30	Loss	0.031	31	1
22q11.23	0.01	0	40	Loss	0.011	1	1

[a] Fisher's exact test

Table S4: Correlating genes specific to lung metastasis

Rank	Probe Set	Symbol	p-value	FDR	Fold change
1	222027_at	NUCKS1	9.00E-07	0.0106	0.25
2	1562440_at	MAP3K13	7.50E-06	0.0252	0.17
3	223170_at	TMEM98	1.20E-05	0.0282	3.37
4	201145_at	HAX1	3.51E-05	0.0413	2.57
5	212530_at	NEK7	5.24E-05	0.0423	3.02
6	215314_at	ANK3	9.01E-05	0.0444	0.31
7	209507_at	RPA3	0.00011	0.0483	4.47
8	208322_s_at	ST3GAL1	0.00022	0.0528	4.33
9	219816_s_at	RBM23	0.00025	0.0536	2.86
10	200678_x_at	GRN	0.00028	0.0559	3.82
11	242029_at	FNDC3B	0.00029	0.0559	0.28
12	218391_at	SNF8	0.00030	0.0569	2.38
13	210768_x_at	TMCO1	0.00034	0.0580	2.4
14	216041_x_at	GRN	0.00035	0.0580	3.74
15	211098_x_at	TMCO1	0.00036	0.0580	2.38
16	209413_at	B4GALT2	0.00036	0.0580	0.44
17	221692_s_at	MRPL34	0.00038	0.0580	2.77
18	203090_at	SDF2	0.00038	0.0580	2.17
19	203033_x_at	FH	0.00043	0.0580	3.05
20	230320_at	TBRG1	0.00043	0.0580	0.45
21	213758_at	COX4I1	0.00047	0.0580	0.48
22	212323_s_at	VPS13D	0.00047	0.0580	0.5
23	213588_x_at	RPL14	0.00049	0.0580	0.56
24	209929_s_at	IKBKG	0.00051	0.0580	0.44
25	1569325_at	ARPC5	0.00054	0.0580	0.47
26	212169_at	FKBP9	0.00055	0.0580	2.14
27	211284_s_at	GRN	0.00057	0.0580	3.58
28	201389_at	ITGA5	0.00060	0.0580	2.39
29	204824_at	ENDOG	0.00061	0.0580	3.19
30	236862_at	GOPC	0.00061	0.0580	0.35
31	202736_s_at	LSM4	0.00062	0.0580	2.45
32	223402_at	DUSP23	0.00064	0.0580	2.15
33	1556277_a_at	PAPD4	0.00064	0.0580	0.38
34	212228_s_at	COQ9	0.00069	0.0599	2.6
35	207769_s_at	PQBP1	0.00070	0.0599	1.98
36	209969_s_at	STAT1	0.00071	0.0599	0.41
37	201023_at	TAF7	0.00071	0.0599	2.09
38	202433_at	SLC35B1	0.00072	0.0599	2.03
39	207842_s_at	CASC3	0.00073	0.0599	1.96
40	206016_at	CCDC22	0.00074	0.0599	2.38
41	225427_s_at	APOA1BP	0.00077	0.0604	2.61
42	202416_at	DNAJC7	0.00078	0.0609	2.33
43	213052_at	PRKAR2A	0.00085	0.0626	2.15
44	218220_at	C12orf10	0.00088	0.0626	2.31

45	208764_s_at	ATP5G2	0.00089	0.0626	2.93
46	218681_s_at	SDF2L1	0.00090	0.0626	2.54
47	220063_at	GSTCD	0.00090	0.0626	0.43
48	208743_s_at	YWHAB	0.00091	0.0626	2.34
49	38964_r_at	WAS	0.00092	0.0626	0.45
50	223318_s_at	ALKBH7	0.00093	0.0626	3.77
51	224314_s_at	EGLN1	0.00094	0.0626	2.37
52	215012_at	ZNF451	0.00094	0.0626	0.37

Table S5: Correlating genes specific to lymph node metastasis

Rank	Probe Set	Symbol	p-value	FDR	Fold change
1	206727_at	C9	3.10E-08	0.00037	6.55
2	205822_s_at	HMGCS1	9.00E-08	0.00014	0.098
3	230717_at	LCN12	1.70E-07	0.00135	7.03
4	206755_at	CYP2B6	2.02E-07	0.00149	0.15
5	214395_x_at	EEF1D	2.70E-07	0.00034	0.205
6	202132_at	WWTR1	3.10E-07	0.00037	6.54
7	225324_at	CRLS1	3.20E-07	0.00038	0.141
8	218433_at	PANK3	5.60E-07	0.00059	5.14
9	204624_at	ATP7B	9.00E-07	0.00014	0.098
10	226438_at	SNTB1	1.70E-06	0.00135	7.02
11	209205_s_at	LMO4	2.02E-06	0.00149	0.15
12	221750_at	HMGCS1	2.26E-06	0.00165	0.16
13	205311_at	DDC	2.70E-06	0.00034	0.077
14	212607_at	AKT3	3.10E-06	0.00037	6.53
15	213385_at	CHN2	3.20E-06	0.00038	0.13
16	202539_s_at	HMGCR	3.36E-06	0.00219	15.24
17	207981_s_at	ESRRG	4.51E-06	0.00277	0.17
18	201875_s_at	MPZL1	5.60E-06	0.00059	5.13
19	204493_at	BID	6.50E-06	0.00365	0.32
20	208965_s_at	IFI16	7.83E-06	0.00419	0.29
21	206898_at	CDH19	8.68E-06	0.00450	6.14
22	212609_s_at	AKT3	1.70E-05	0.00135	7.01
23	1552727_s_at	ADAMTS17	2.02E-05	0.00149	0.15
24	241741_at	CRLS1	2.26E-05	0.00165	0.16
25	216834_at	RGS1	3.36E-05	0.00219	15.23
26	1554241_at	COCH	4.51E-05	0.00277	0.17
27	232785_at	RGAG1	6.50E-05	0.00365	0.32
28	221995_s_at	MRP63	7.83E-05	0.00419	0.33
29	200762_at	DPYSL2	8.68E-05	0.00450	6.13
30	214708_at	SNTB1	0.00011	0.00518	0.23
31	227674_at	ZNF585A	0.00011	0.00518	0.23
32	226978_at	PPARA	0.00011	0.00543	0.25
33	207565_s_at	MR1	0.00011	0.00543	0.69
34	210825_s_at	PEBP1	0.00013	0.00598	0.37
35	226150_at	PPAPDC1B	0.00013	0.00598	0.37
36	229377_at	GRTP1	0.00014	0.00644	0.15
37	212148_at	PBX1	0.00014	0.00644	0.15
38	203644_s_at	MON1B	0.00018	0.00754	3.98
39	1555225_at	C1orf43	0.00018	0.00754	3.99
40	224015_s_at	MRPS25	0.00018	0.00760	0.31
41	201874_at	MPZL1	0.00018	0.00760	0.27
42	202988_s_at	RGS1	0.00019	0.00810	3.16
43	224578_at	RCC2	0.00019	0.00810	3.15
44	234312_s_at	ACSS2	0.00023	0.00894	0.26

45	208966_x_at	IFI16	0.00023	0.00894	0.26
46	223580_at	SPSB2	0.00024	0.00933	2.84
47	226988_s_at	MYH14	0.00024	0.00933	2.85
48	1557236_at	APOL6	0.00025	0.00938	0.25
49	223437_at	PPARA	0.00026	0.00986	0.3
50	230573_at	SGK2	0.00026	0.00986	0.47
51	203794_at	CDC42BPA	0.00029	0.01040	2.67
52	202388_at	RGS2	0.00029	0.01040	2.68
53	209189_at	FOS	0.00043	0.01720	3.4
54	203028_s_at	CYBA	0.00047	0.01450	2.84
55	218336_at	PFDN2	0.00047	0.01450	2.83
56	204766_s_at	NUDT1	0.00050	0.01510	2.79
57	212086_x_at	LMNA	0.00050	0.01510	2.78
58	223500_at	CPLX1	0.00053	0.01560	0.24
59	45288_at	ABHD6	0.00053	0.01560	0.24
60	210908_s_at	PFDN5	0.00053	0.01580	2.76
61	202598_at	S100A13	0.00053	0.01580	2.77
62	209513_s_at	HSDL2	0.00054	0.01580	0.27
63	1552281_at	SLC39A5	0.00054	0.01580	0.27
64	32811_at	MYO1C	0.00056	0.01620	2.45
65	212399_s_at	VGLL4	0.00056	0.01620	2.46
66	223438_s_at	PPARA	0.00059	0.01890	0.33
67	236217_at	SLC31A1	0.00059	0.01680	0.3
68	221552_at	ABHD6	0.00061	0.01710	0.3
69	204924_at	TLR2	0.00061	0.01710	0.3
70	224715_at	WDR34	0.00062	0.01720	3.39
71	212151_at	PBX1	0.00062	0.00938	0.25
72	201850_at	CAPG	0.00065	0.01780	3.17
73	223569_at	PPAPDC1B	0.00065	0.01780	3.16
74	233168_s_at	SELO	0.00070	0.01890	0.33
75	225868_at	TRIM47	0.00086	0.02120	0.37
76	1557116_at	APOL6	0.00086	0.02120	0.37
77	206332_s_at	IFI16	0.00093	0.02220	0.38
78	233544_at	GNL1	0.00093	0.02220	0.38
79	213589_s_at	B3GNTL1	0.00099	0.02310	4.22
80	210087_s_at	MPZL1	0.00099	0.02310	4.21
81	209191_at	TUBB6	0.00123	0.01680	0.3

Table S6: Correlating genes specific to colorectal liver metastasis

Rank	Probe Set	Symbol	p-value	FDR	Fold change
1	204534_at	VTN	< 1e-07	< 1e-07	0.0069
2	202834_at	AGT	< 1e-07	< 1e-07	0.019
3	213800_at	CFH	< 1e-07	< 1e-07	0.017
4	204918_s_at	MLLT3	< 1e-07	< 1e-07	12.53
5	230271_at	ONECUT2	< 1e-07	< 1e-07	0.059
6	212158_at	SDC2	< 1e-07	< 1e-07	0.022
7	231029_at	F5	< 1e-07	< 1e-07	0.038
8	209071_s_at	RGS5	< 1e-07	< 1e-07	0.089
9	204713_s_at	F5	< 1e-07	< 1e-07	0.041
10	203052_at	C2	< 1e-07	< 1e-07	0.082
11	226804_at	FAM20A	< 1e-07	< 1e-07	0.087
12	204714_s_at	F5	< 1e-07	< 1e-07	0.044
13	228956_at	UGT8	< 1e-07	< 1e-07	25.2
14	218546_at	C1orf115	< 1e-07	< 1e-07	0.062
15	212154_at	SDC2	< 1e-07	< 1e-07	0.039
16	229910_at	SHE	< 1e-07	< 1e-07	0.12
17	203440_at	CDH2	< 1e-07	< 1e-07	0.037
18	202668_at	EFNB2	1.00E-07	6.14E-06	8.3
19	238567_at	SGPP2	1.00E-07	6.14E-06	12.37
20	241981_at	FAM20A	1.00E-07	6.14E-06	0.11
21	1569652_at	MLLT3	1.00E-07	6.14E-06	15.5
22	212226_s_at	PPAP2B	1.00E-07	6.14E-06	0.12
23	203586_s_at	ARL4D	2.00E-07	1.13E-05	0.13
24	203650_at	PROCR	2.00E-07	1.13E-05	5.84
25	243221_at	FAM20A	2.00E-07	1.13E-05	0.16
26	203441_s_at	CDH2	2.00E-07	1.13E-05	0.19
27	205009_at	TFF1	2.00E-07	1.13E-05	23.17
28	205478_at	PPP1R1A	2.00E-07	1.13E-05	0.076
29	205654_at	C4BPA	2.00E-07	1.13E-05	0.029
30	209211_at	KLF5	2.00E-07	1.13E-05	18.5
31	212067_s_at	C1R	3.00E-07	1.59E-05	0.12
32	230076_at	PITPNM3	3.00E-07	1.59E-05	6.54
33	208343_s_at	NR5A2	4.00E-07	2.04E-05	0.13
34	233446_at	ONECUT2	5.00E-07	2.47E-05	0.099
35	212554_at	CAP2	6.00E-07	2.89E-05	0.11
36	210324_at	C8G	6.00E-07	2.89E-05	0.072
37	205471_s_at	DACH1	6.00E-07	2.89E-05	6.65
38	202488_s_at	FXYD3	6.00E-07	2.89E-05	6.5
39	205844_at	VNN1	7.00E-07	3.26E-05	0.062
40	213116_at	NEK3	8.00E-07	3.65E-05	6.14
41	218208_at	PQLC1	9.00E-07	4.03E-05	0.2
42	212157_at	SDC2	1.00E-06	4.40E-05	0.073
43	218353_at	RGS5	1.20E-06	5.15E-05	0.16
44	229147_at	RASSF6	1.20E-06	5.15E-05	14.4

45	219298_at	ECHDC3	1.20E-06	5.15E-05	0.1
46	219215_s_at	SLC39A4	1.50E-06	6.16E-05	10.25
47	235019_at	CPM	2.00E-06	7.70E-05	0.15
48	242945_at	FAM20A	2.40E-06	8.93E-05	0.15
49	209212_s_at	KLF5	2.40E-06	8.93E-05	10.07
50	236236_at	WNK3	2.60E-06	9.48E-05	0.096
51	201998_at	ST6GAL1	2.90E-06	0.00010	0.19
52	226982_at	ELL2	3.00E-06	0.00011	0.18
53	221747_at	TNS1	3.00E-06	0.00011	0.17
54	231944_at	ERO1LB	3.60E-06	0.00012	0.12
55	203988_s_at	FUT8	3.90E-06	0.00013	7.08
56	202888_s_at	ANPEP	5.20E-06	0.00017	0.07
57	227478_at	SETBP1	6.20E-06	0.00020	0.18
58	235315_at	TSC22D1	6.40E-06	0.00020	6.62
59	201719_s_at	EPB41L2	6.70E-06	0.00021	6.58
60	215111_s_at	TSC22D1	6.90E-06	0.00021	6
61	227250_at	KREMEN1	8.00E-06	0.00024	4.66
62	225793_at	LIX1L	9.10E-06	0.00027	0.13
63	201718_s_at	EPB41L2	9.10E-06	0.00027	4.03
64	226722_at	FAM20C	9.30E-06	0.00027	0.12
65	239911_at	ONECUT2	9.50E-06	0.00028	0.17
66	214157_at	GNAS	1.02E-05	0.00029	3.59
67	235148_at	KRTCAP3	1.02E-05	0.00029	6.56
68	203580_s_at	SLC7A6	1.12E-05	0.00032	3.52
69	206100_at	CPM	1.23E-05	0.00035	0.14
70	219014_at	PLAC8	1.26E-05	0.00035	4.45
71	218983_at	C1RL	1.28E-05	0.00036	0.23
72	204394_at	SLC43A1	1.29E-05	0.00036	0.11
73	227892_at	PRKAA2	1.30E-05	0.00036	0.16
74	233463_at	RASSF6	1.32E-05	0.00036	8.05
75	209355_s_at	PPAP2B	1.35E-05	0.00037	0.12
76	210174_at	NR5A2	1.41E-05	0.00038	0.23
77	212279_at	TMEM97	1.45E-05	0.00039	0.2
78	222592_s_at	ACSL5	1.48E-05	0.00040	4.63
79	218251_at	MID1IP1	1.56E-05	0.00042	0.28
80	225912_at	TP53INP1	1.65E-05	0.00043	0.17
81	218182_s_at	CLDN1	2.06E-05	0.00052	0.26
82	238441_at	PRKAA2	2.06E-05	0.00052	0.24
83	223484_at	C15orf48	2.21E-05	0.00055	11.64
84	218435_at	DNAJC15	2.21E-05	0.00055	5.78
85	227190_at	TMEM37	2.23E-05	0.00056	0.19
86	200824_at	GSTP1	2.38E-05	0.00059	5.68
87	212339_at	EPB41L1	2.58E-05	0.00064	4.47
88	222127_s_at	EXOC1	3.14E-05	0.00075	3.67
89	225224_at	C20orf112	3.37E-05	0.00079	3.76
90	202862_at	FAH	3.43E-05	0.00080	0.18
91	235638_at	RASSF6	3.52E-05	0.00082	4.2

92	205016_at	TGFA	3.71E-05	0.00085	5.35
93	207676_at	ONECUT2	3.76E-05	0.00086	0.19
94	244455_at	KCNT2	3.78E-05	0.00086	0.12
95	225589_at	SH3RF1	3.85E-05	0.00088	4.33
96	204831_at	CDK8	3.95E-05	0.00090	4.3
97	211464_x_at	CASP6	4.14E-05	0.00093	4.04
98	206868_at	STARD8	4.21E-05	0.00095	0.24
99	224998_at	CMTM4	4.37E-05	0.00098	5.81
100	209238_at	STX3	4.43E-05	0.00099	4.93
101	212295_s_at	SLC7A1	4.45E-05	0.00099	10.4
102	204011_at	SPRY2	4.53E-05	0.00100	5.52
103	235706_at	CPM	4.58E-05	0.00101	0.21
104	203216_s_at	MYO6	4.62E-05	0.00101	5.28
105	213241_at	PLXNC1	5.17E-05	0.00111	0.22
106	205376_at	INPP4B	5.22E-05	0.00111	6.14
107	243403_x_at	CPM	5.28E-05	0.00112	0.29
108	227808_at	DNAJC15	5.87E-05	0.00122	3.81
109	238601_at	PHKB	5.87E-05	0.00122	4.05
110	241765_at	CPM	5.92E-05	0.00123	0.29
111	225747_at	COQ10A	6.29E-05	0.00129	0.25
112	202890_at	MAP7	6.75E-05	0.00138	2.96
113	204554_at	PPP1R3D	6.86E-05	0.00139	3.7
114	203579_s_at	SLC7A6	7.02E-05	0.00142	4.17
115	201945_at	FURIN	7.24E-05	0.00146	0.28
116	214091_s_at	GPX3	7.35E-05	0.00147	0.076
117	235129_at	PPP1R1A	8.01E-05	0.00158	0.26
118	64408_s_at	CALML4	8.10E-05	0.00159	4.66
119	224802_at	NDFIP2	8.15E-05	0.00160	5.25
120	212551_at	CAP2	8.19E-05	0.00160	0.14
121	225520_at	MTHFD1L	8.42E-05	0.00164	3.62
122	209684_at	RIN2	8.47E-05	0.00165	4.2
123	202370_s_at	CBFB	8.90E-05	0.00171	3.62
124	1554533_at	C2	8.95E-05	0.00172	0.19
125	201348_at	GPX3	9.15E-05	0.00175	0.045
126	228557_at	L3MBTL4	9.41E-05	0.00179	0.28
127	208865_at	CSNK1A1	9.44E-05	0.00179	3.04
128	1558549_s_at	VNN1	9.46E-05	0.00179	0.13
129	229553_at	PGM2L1	9.47E-05	0.00179	3.84
130	229376_at	PROX1	9.48E-05	0.00179	0.23
131	212543_at	AIM1	9.59E-05	0.00181	5.75
132	229614_at	ZNF320	9.76E-05	0.00184	5.02
133	200862_at	DHCR24	0.00010	0.00192	0.14
134	231371_at	TDRD10	0.00010	0.00192	0.15
135	227423_at	LRRC28	0.00011	0.00206	0.23
136	224186_s_at	RNF123	0.00011	0.00209	0.28
137	203868_s_at	VCAM1	0.00012	0.00216	0.096
138	219622_at	RAB20	0.00012	0.00219	3.67

139	202552_s_at	CRIM1	0.00012	0.00220	4.97
140	226403_at	TMC4	0.00012	0.00220	8.66
141	205225_at	ESR1	0.00012	0.00223	0.15
142	203578_s_at	SLC7A6	0.00013	0.00224	2.81
143	222549_at	CLDN1	0.00013	0.00225	0.34
144	204497_at	ADCY9	0.00014	0.00249	0.35
145	216905_s_at	ST14	0.00014	0.00251	7.96
146	205282_at	LRP8	0.00014	0.00251	4.44
147	217758_s_at	TM9SF3	0.00015	0.00254	3.23
148	222478_at	VPS36	0.00015	0.00257	4.1
149	213929_at	EXPH5	0.00015	0.00266	4.86
150	232136_s_at	CTTNBP2	0.00016	0.00269	4.66
151	236852_at	FBXO43	0.00016	0.00274	0.17
152	203608_at	ALDH5A1	0.00017	0.00283	0.23
153	201826_s_at	SCCPDH	0.00017	0.00290	0.3
154	241704_x_at	ZNF320	0.00017	0.00291	3.82
155	218552_at	ECHDC2	0.00017	0.00292	0.25
156	228402_at	ZBED3	0.00017	0.00293	0.28
157	212850_s_at	LRP4	0.00019	0.00310	12.34
158	203790_s_at	HRSP12	0.00020	0.00325	0.11
159	227962_at	ACOX1	0.00020	0.00331	0.28
160	229256_at	PGM2L1	0.00020	0.00331	2.9
161	225563_at	PAN3	0.00020	0.00332	3.75
162	212230_at	PPAP2B	0.00020	0.00333	0.29
163	242669_at	UFM1	0.00021	0.00337	5.51
164	227285_at	C1orf51	0.00022	0.00359	0.26
165	209045_at	XPNPEP1	0.00023	0.00364	2.75
166	212956_at	TBC1D9	0.00023	0.00364	0.22
167	229696_at	FECH	0.00023	0.00365	0.32
168	218542_at	CEP55	0.00024	0.00374	6.29
169	229372_at	GOLT1A	0.00024	0.00378	0.19
170	221879_at	CALML4	0.00024	0.00378	5.55
171	212204_at	TMEM87A	0.00025	0.00388	2.86
172	202687_s_at	TNFSF10	0.00026	0.00411	0.25
173	204000_at	GNB5	0.00027	0.00418	0.31
174	202674_s_at	LMO7	0.00027	0.00418	3.05
175	1558027_s_at	PRKAB2	0.00027	0.00420	0.26
176	215136_s_at	EXOSC8	0.00027	0.00421	2.72
177	201825_s_at	SCCPDH	0.00028	0.00428	0.29
178	221087_s_at	APOL3	0.00028	0.00435	0.2
179	201833_at	HDAC2	0.00029	0.00441	2.92
180	213135_at	TIAM1	0.00030	0.00461	0.26
181	226742_at	SAR1B	0.00033	0.00493	0.29
182	230498_at	MCHR1	0.00033	0.00495	0.1
183	205339_at	STIL	0.00033	0.00495	3.05
184	227701_at	C10orf118	0.00033	0.00496	3.01
185	210233_at	IL1RAP	0.00033	0.00499	0.26

186	202750_s_at	TFIP11	0.00034	0.00501	0.36
187	201536_at	DUSP3	0.00034	0.00504	0.27
188	203349_s_at	ETV5	0.00035	0.00519	0.26
189	240728_at	PLCB4	0.00036	0.00526	3.55
190	235099_at	CMTM8	0.00037	0.00541	0.34
191	203152_at	MRPL40	0.00039	0.00559	0.32
192	1553113_s_at	CDK8	0.00041	0.00590	3.83
193	202032_s_at	MAN2A2	0.00042	0.00597	0.38
194	204973_at	GJB1	0.00043	0.00611	0.19
195	1568600_at	CALML4	0.00044	0.00625	3.06
196	217984_at	RNASET2	0.00044	0.00627	3.7
197	204079_at	TPST2	0.00045	0.00633	0.26
198	221748_s_at	TNS1	0.00047	0.00660	0.28
199	228051_at	KIAA1244	0.00048	0.00665	4.77
200	211712_s_at	ANXA9	0.00049	0.00676	0.27
201	224496_s_at	TMEM107	0.00049	0.00680	3.2
202	205933_at	SETBP1	0.00049	0.00683	0.24
203	234103_at	KCNT2	0.00050	0.00691	0.18
204	224984_at	NFAT5	0.00053	0.00718	3.5
205	223329_x_at	SUGT1	0.00053	0.00723	2.83
206	229590_at	RPL13	0.00053	0.00726	3.45
207	201131_s_at	CDH1	0.00055	0.00742	3.32
208	222895_s_at	BCL11B	0.00056	0.00749	4.23
209	212473_s_at	MICAL2	0.00056	0.00752	4.96
210	203524_s_at	MPST	0.00056	0.00759	0.3
211	203528_at	SEMA4D	0.00056	0.00759	3.64
212	236514_at	ACOT8	0.00057	0.00760	2.46
213	217080_s_at	HOMER2	0.00057	0.00763	0.3
214	205054_at	NEB	0.00057	0.00771	0.17
215	226099_at	ELL2	0.00058	0.00775	0.29
216	205730_s_at	ABLIM3	0.00059	0.00784	0.35
217	223330_s_at	SUGT1	0.00061	0.00801	4.6
218	225278_at	PRKAB2	0.00063	0.00828	0.34
219	218470_at	YARS2	0.00063	0.00828	3.02
220	228365_at	CPNE8	0.00064	0.00838	0.21
221	212218_s_at	FASN	0.00067	0.00864	0.15
222	236140_at	GCLM	0.00067	0.00864	0.27
223	225401_at	C1orf85	0.00067	0.00871	0.29
224	228496_s_at	CRIM1	0.00068	0.00877	4.34
225	210613_s_at	SYNGR1	0.00069	0.00889	0.25
226	214976_at	RPL13	0.00070	0.00900	3.48
227	220012_at	ERO1LB	0.00072	0.00923	0.25
228	218603_at	HECA	0.00073	0.00928	3.02
229	204435_at	NUPL1	0.00076	0.00957	2.96
230	225060_at	LRP11	0.00077	0.00964	3.55
231	204143_s_at	ENOSF1	0.00077	0.00966	0.34
232	31846_at	RHOD	0.00077	0.00967	0.39

233	222217_s_at	SLC27A3	0.00078	0.00969	0.3
234	224309_s_at	SUGT1	0.00078	0.00969	2.92
235	212418_at	ELF1	0.00078	0.00971	4.3
236	209155_s_at	NT5C2	0.00078	0.00971	2.53
237	205199_at	CA9	0.00078	0.00972	4.49
238	205227_at	IL1RAP	0.00078	0.00974	0.28
239	213524_s_at	G0S2	0.00079	0.00975	0.15
240	225719_s_at	MRPL55	0.00079	0.00975	0.39
241	219677_at	SPSB1	0.00080	0.00985	0.3
242	231146_at	FAM24B	0.00080	0.00987	2.9
243	209533_s_at	PLAA	0.00081	0.00994	2.3
244	224609_at	SLC44A2	0.00083	0.01020	3.02
245	203973_s_at	CEBPD	0.00084	0.01030	0.36
246	219981_x_at	ZNF587	0.00085	0.01040	3.39
247	222619_at	ZNF281	0.00086	0.01050	0.33
248	1552520_at	TMEM74	0.00087	0.01050	0.36
249	209160_at	AKR1C3	0.00087	0.01060	0.31
250	228656_at	PROX1	0.00088	0.01060	0.19
251	202944_at	NAGA	0.00088	0.01060	0.44
252	212746_s_at	CEP170	0.00091	0.01100	0.26
253	204305_at	MIPEP	0.00094	0.01120	3.68
254	201501_s_at	GRSF1	0.00094	0.01120	2.8
255	215948_x_at	ZMYM5	0.00095	0.01130	2.48
256	1554719_at	NDUFA10	0.00100	0.01170	2.48